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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,321	02/19/2004	Haiming Wang	TWI-23910	6131
28584	7590	11/30/2005	EXAMINER	
STALLMAN & POLLOCK LLP SUITE 2200 353 SACRAMENTO STREET SAN FRANCISCO, CA 94111			AKANBI, ISIAKA O	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/782,321

Applicant(s)

WANG ET AL.

Examiner

Isiaka O. Akanbi

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 3 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 is/are allowed.
- 6) ☒ Claim(s) 4-16 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 26 September 2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### Amendment

The Amendment filed on 26 September 2005 has been entered into the file.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 4 is rejected under 35 U.S.C. 102(e) as being anticipated by Rotter (6,784,991).

As to claim 4, Rotter discloses an ellipsometer comprising (col. 9, line 43-col. 10, line 8):

a light source for generating a probe beam of radiation (720/722)(fig. 1)

an optical element (732/733) for focusing the probe beam substantially normal to the surface of the sample (704) such that various rays within the focused probe beam create a spread of angles of incidence (col. 9, line 43-48);

a rotating compensator (734) for retarding the phase of one polarization state in the probe beam with respect to the phase of the other polarization state in the probe beam (col. 9, line 56-62);

a polarizer (736) for creating interference between the two polarization states in the probe beam after the probe beam has been reflected from the surface of the sample (704);

a quadrant detector (740) for measuring the power of the reflected probe beam after it has passed through the retarding and polarizing means, each said quadrant of the detector generating an output that integrates the intensity of various rays having different angles of incidence (col. 9, line 62-col. 10, line 5)(fig. 1), and

a processor (748) for analyzing the output of the four quadrants based on measurements taken when the compensator is in two different azimuthal positions in order to determine the changes in the phase in the probe beam induced by the focusing optical element (col. 10, line 6-8).

Claims 5-11 and 13-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Opsal (6,678,084).

As to claims 5 and 11, Opsal discloses an ellipsometer (col. 2, line 62-col. 3, line 52) for evaluating a sample comprising:

- a light source for generating a monochromatic/narrowband (20), polarized probe beam (22);

- optics (44) for directing the probe beam normal to the sample surface (14);

- an objective (26) for focusing the probe beam onto the sample surface in a create a spread of angles of incidence (col. 4, line 47-49), said objective (26) also collecting the probe beam after it has been reflected by the sample(fig. 1);

- a photodetector (40) positioned to monitor the probe beam after reflection from the sample and having detecting regions for generating separate output signals along at least two orthogonal axes (col. 5, line19-28);

- an analyzer (44) positioned between the sample and the photodetector;

- a compensator (42) positioned between the light source and the analyzer with one of said analyzer and compensator being rotatable; and

- a processor (50) for evaluating characteristics of the sample based on the output signals with said evaluation including accounting for the polarization effects induced by the objective.

As to claim 6, Opsal discloses wherein said processor (50) accounts for the polarization effects induced by the objective by treating the objective as an equivalent waveplate having a particular azimuthal angle and retardation value (col. 5, line 35-col. 6 line3).

As to claims 7 and 13, Opsal discloses wherein the photodetector (40)(fig. 3) is a quad cell.

As to claims 8 and 14, Opsal discloses wherein the photodetector includes a two dimensional array of photodetector elements (col. 3, line 44-45).

As to claims 9 and 15, Opsal discloses wherein the output signals along one axis are compared to the output signals along the remaining axis in order to account for the polarization effects induced by the objective (col. 3, line 11-30).

As to claims 10 and 16, Opsal discloses wherein the compensator is moved between two orthogonal positions to obtain to separate measurements (col. 5, line 3-18).

### ***Allowable Subject Matter***

Claim 1 is allowed.

As to claim 1, the prior art of record, taken alone or in combination, fails to disclose or render obvious said detector being subdivided to provide eight coefficients for measuring the retardation  $\delta_B$  and the azimuth angle  $O_B$  of the objective lens and a processor for evaluating the sample based on the outputs of the detector. Additionally, the prior art of record, taken alone or in combination, fails to disclose or render obvious the processor configured to perform a harmonic analysis on the output signal from the detector to determine normalized Fourier coefficients corresponding to  $2\omega$  and  $4\omega$  components that are included in the output signal use the Fourier coefficients to measure the retardation  $\delta_B$  and the azimuth angle  $O_B$  of the objective lens and use the retardation  $\delta_B$  and the azimuth angle  $O_B$  to measure and eliminate the ellipsometric effects of the objective lens.

Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 12, the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein the objective is treated as an equivalent waveplate at a particular azimuthal angle and retardation value.

### ***Response to Amendment***

Applicant's arguments filed 26 September 2005 have been fully considered but they are not persuasive. Applicant asserts that Rotter does not teach rotating the

compensator (waveplate 734), nor does it teach rotating the compensator into two different azimuthal positions in order to determine the changes in the phase in the probe beam induced by the focusing optical element, however Rotter discloses phase retardation in the beam and in order to do that it would be inherent that the compensator is rotated, therefore, the limitation is met.

#### **Additional Prior Art**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is Yamamoto et al. (3,687,555).

Yamamoto discloses that it is inherent that the compensator is rotated in order to compensate for the phase difference.

#### **Fax/Telephone Information**

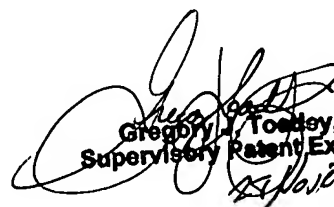
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi

November 4, 2005

  
Gregory J. Toatley, Jr.  
Supervisory Patent Examiner  
11/4/05